1035-76-1391 **Yousef Daneshbod*** (ydaneshbod@ulv.edu), 1950 Third Street, La Verne, CA 91750. *Shape analysis of droplets on patterned surfaces.*

The problem of analyzing the static shape of liquid drops on solid surfaces has long been a major source of attraction for physicists, biologists and applied mathematicians. This study has been motivated by the fact that shapes of vesicles that are formed from lipid bi-layers in aqueous solutions could be regarded as simple models for biological membranes and cells. These vesicles tend to have a surface of mean constant curvature which is equivalent to the shape of a static droplet in the absence of gravity. In this talk we will theoretically investigate the surface morphology of liquids deposited onto patterned surfaces. The equilibrium shape of a constant volume droplet on a patterned surface is determined by minimizing the total free energy, which includes all contributions from body, surface, and line forces. As a result, a novel numerical procedure based on finite differences is implemented to investigate various drop topologies due to different surface patterns. The numerical results show good agreement with analytical and experimental data. (Received September 19, 2007)